AD-A131 509 TOPICAL HAZARD EVALUATION PROGRAM OF CANDIDATE INSECT REPELLENT A13-30349 (U) ARMY ENVIRONMENTAL HYGIENE AGENCY ABERDEEN PROVING GROUND MD J V WADE ET AL. 1/1

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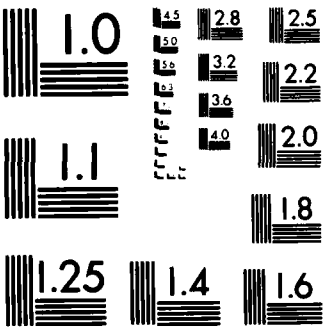

AEHA

UNITED STATES ARMY ENVIRONMENTAL HYGIENE AGENCY

ABERDEEN PROVING GROUND, MD 21010

TOPICAL HAZARD EVALUATION PROGRAM
OF
CANDIDATE INSECT REPELLENT
AI3-38349a
US DEPARTMENT OF AGRICULTURE PROPRIETARY CHEMICALS
STUDY NO. 75-51-0329-83
JULY 1981 - JANUARY 1983

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Skin Irritation
Guinea Pig Sensitization
Photo Irritation
ALD
Topical Hazard Evaluation Program
USDA Proprietary Chemicals

20. ABSTRACT (Continue on reverse side if necessary and identify by block number)

Chemical AI3-38349a did not produce irritation of the intact skin or of the skin surrounding an abrasion. It produced mild injury to the cornea and, in addition, some injury to the conjunctiva. Injury to occular tissue was eliminated by immediate washing with water. This chemical did not potentiate photo irritation. Chemical AI3-38349a produced a moderate sensitization reaction in the guinea pig.

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U. S. ARMY ENVIRONMENTAL HYGIENE AGENCY
ABERDEEN PROVING GROUND, MARYLAND 21010

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SUBJECT: Topical Hazard Evaluation Program of Candidate Insect Repellent AI3-38349a, US Department of Agriculture Proprietary Chemical, Study Number 75-51-0329-83, July 1981 - January 1983

Executive Secretary
Armed Forces Pest Management Board
Forest Glen Section, WRAMC
Washington, DC 20307

EXECUTIVE SUMMARY

The purpose, essential findings and recommendations of the inclosed report are as follows:

a. Purpose. The purpose of this program is to provide guidance for further entomological testing of candidate insect repellent AI3-38349a by means of laboratory animal studies using New Zealand White rabbits and albino Hartley guinea pigs.

b. Essential Findings. Chemical AI3-38349a did not produce primary irritation of the intact skin or of the skin surrounding an abrasion. It produced mild injury to the cornea and, in addition, some injury to the conjunctiva. Injury to occular tissue was eliminated by immediate washing with water. This chemical did not potentiate photoirritation. Chemical AI3-38349a produced a moderate skin sensitization reaction in the guinea pig.

c. Major Recommendation. Recommend that chemical AI3-38349a be disapproved for further testing as a candidate insect repellent.

FOR THE COMMANDER:

Joel C. Gaydos

JOEL C. GAYDOS, M.D.
Colonel, MC
Director, Occupational and Environmental Health

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as (5 cy)

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DEPARTMENT OF THE ARMY
U. S. ARMY ENVIRONMENTAL HYGIENE AGENCY
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TOPICAL HAZARD EVALUATION PROGRAM
OF
CANDIDATE INSECT REPELLENT
AI3-38349a
US DEPARTMENT OF AGRICULTURE PROPRIETARY CHEMICALS
STUDY NO. 75-51-0329-83
JULY 1981 - JANUARY 1983

1. AUTHORITY.

a. Letter, US Department of Agriculture - Agricultural Research, Southern Region, Insects Affecting Man and Animals Research Laboratory, Gainsville, Florida, 18 June 1981.

b. Memorandum of Understanding between the US Army Environmental Hygiene Agency; the US Army Health Services Command; the Department of the Army, Office of The Surgeon General; the Armed Forces Pest Control Board; and the US Department of Agriculture, Agricultural Research, Science and Education Administrations; titled, Coordination of Biological and Toxicological Testing of Pesticides, effective 23 January 1979.

2. REFERENCE. Toxicology Division Standing Operating Procedures, US Army Environmental Hygiene Agency (USAEHA), 1981.

3. PURPOSE. The purpose of this program is to provide guidance for further entomological testing of candidate insect repellent AI3-38349a, US Department of Agriculture (USDA) Proprietary Chemical.

4. SUMMARY OF FINDINGS. Hazard evaluations of candidate insect repellent AI3-38349a, USDA Proprietary Chemical, were conducted by this Agency using New Zealand White rabbits for skin and eye studies and albino Hartley guinea pigs for skin sensitivity testing. A tabular presentation of animal toxicity data developed in this Agency follows:*†

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* In conducting the studies described in this report, the investigators adhered to the "Guide for the Care and Use of Laboratory Animals," US Department of Health, Education and Welfare Publication No. (NIH) 80-23, revised 1978.
† The studies reported herein were performed in animal facilities fully accredited by the American Association for the Accreditation of Laboratory Animal Care.

Study No. 75-51-0329-83, Jul 81 - Jan 83

TABLE. PRESENTATION OF DATA

Test	Results	Interpretation
Skin Irritation Studies		
Rabbits		
Single 24-hour application to intact and abraded skin of New Zealand White rabbits. 0.5 ml technical grade chemical applied to each of six rabbits.	Chemical AI3-38349a did not produce primary irritation of the intact skin or of the skin surrounding an abrasion.	USAEHA Category I (ref Appendix A)
Eye Irritation Studies		
Rabbits		
Single 24-hour application of 0.1 mL technical grade chemical to one eye of each of nine New Zealand White rabbits. Three of the nine rabbits had the eye flushed with warm water for 1 minute, 25 seconds after application.	Chemical AI3-38349a produced mild injury to the cornea and, in addition, some injury to the conjunctiva. Injury to occular tissues was eliminated by washing with water.	USAEHA Category C (ref Appendix A)
Photochemical Skin Irritation Studies		
Rabbits		
A single 0.05 mL application of a 25% (w/v) solution of the tested chemical and a 10% (w/v) Oil of Bergamot (positive control) in 95% ethyl alcohol was applied to the intact skin of six rabbits. Five minutes after application the rabbits were exposed to ultraviolet (UV) light (365 mn) for 30 minutes at a distance of 10-15 cm.	A 25% solution of Chemical AI3-38349a in ethanol did not cause a photochemical irritation reaction under test conditions.	Chemical AI3-38349a did not cause a photochemical irritation reaction under test conditions and is not expected to cause a photo-chemical irritation reaction in humans.
Control		
Following UV exposures of the rabbits, 0.05 mL of the test chemical, positive control (Oil of Bergamot) and diluent were applied to additional skin areas to serve as un-irradiated control sites. Application areas were checked for skin irritation at 24, 48 and 72 hours.	Positive control application and irradiation caused greater irritant effects than in un-irradiated skin areas.	

Test	Results	Interpretation
Sensitization Studies		
Guinea Pigs (Male) Intradermal (ID) injections of 0.1 mL of a 0.1% solution (w/v) of the tested chemical or of dinitrochlorobenzene (DNCB)* in a mixture containing 1 volume of propylene glycol and 29 volumes of saline.		
Ten test guinea pigs were given 10 sensitizing doses over a 3-week period. After a 2-week rest, they were challenged with an ID injection of the test chemical.	Challenge doses of chemical AI3-38349a produced a moderate sensitization reaction.	Chemical AI3-38349a produced a moderate sensitization reaction under test conditions and could produce a sensitization reaction in humans.
Ten positive control guinea pigs were sensitized over 3 weeks with DNCB. After a 2-week rest, they were challenged with ID injections of DNCB.	Challenge dose of DNCB in positive control guinea pigs produced a marked sensitization reaction in 10 out of 10 guinea pigs.	The DNCB produced a marked reaction, indicating these guinea pigs respond to sensitizing agents.

* A known skin sensitizer.

5. CONCLUSION. Chemical AI3-38349a did not produce primary irritation of the intact skin or of the skin surrounding an abrasion. It produced mild injury to the cornea and, in addition, some injury to the conjunctiva. Injury to occular tissues was eliminated by immediate washing with water. This chemical did not potentiate photoirritation. Chemical AI3-38349a produced a moderate skin sensitization reaction in the guinea pig. The studies were monitored by Analytical Quality Assurance Office (see Appendix B).

6. RECOMMENDATION. Recommend that USDA Proprietary Chemical AI3-38349a be disapproved for further testing as a candidate insect repellent (under the provisions of the Memorandum of Understanding, para 1b this report).

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APPENDIX A

TOPICAL HAZARD EVALUATION PROGRAM
DEFINITIONS OF CATEGORIES OF COMPOUNDS BEING
CONSIDERED FOR ACUTE SKIN APPLICATION

CATEGORY I - Compounds producing no primary irritation of the intact skin or no greater than mild primary irritation of the skin surrounding an abrasion. (INTERPRETATION: No restriction for acute application to the human skin.)

CATEGORY II - Compounds producing mild primary irritation of the intact skin and the skin surrounding an abrasion. (INTERPRETATION: Should be used only on human skin found by examination to have no abrasions or may be used as a clothing impregnant.)

CATEGORY III - Compounds producing moderate primary irritation of the intact skin and the skin surrounding an abrasion. (INTERPRETATION: Should not be used directly on the skin without a prophetic patch test having been conducted on humans to determine irritation potential to human skin. May be used without patch testing, with extreme caution, as clothing impregnants. Compound should be resubmitted in the form and at the intended use concentration so that its irritation potential can be reexamined using other test techniques on animals.)

CATEGORY IV - Compounds producing moderate to severe primary irritation of the intact skin and of the skin surrounding an abrasion and, in addition, producing necrosis, vesiculation, and/or eschars. (INTERPRETATION: Should be resubmitted for testing in the form and at the intended use concentration. Upon resubmission, its irritation potential will be reexamined using other test techniques on animals, prior to possible prophetic patch testing in humans, at concentrations which have been shown not to produce primary irritation in animals.)

CATEGORY V - Compounds impossible to classify because of staining of the skin or other masking effects owing to physical properties of the compound. (INTERPRETATION: Not suitable for use on humans.)

EYE CATEGORIES:

A. Compounds noninjurious to the eye. INTERPRETATION: Irritation of human eyes is not expected if the compound should accidentally get into the eyes, provided it is washed out as soon as possible.

B. Compounds producing mild injury to the cornea. INTERPRETATION: Should be used with caution around the eyes.

C. Compounds producing mild injury to the cornea, and in addition some injury to the conjunctiva. INTERPRETATION: Should be used with caution around the eyes and mucosa.

D. Compounds producing moderate injury to the cornea. INTERPRETATION: Should be used with extreme caution around the eyes.

E. Compounds producing moderate injury to the cornea, and in addition producing some injury to the conjunctiva. INTERPRETATION: Should be used with extreme caution around the eyes and mucosa.

F. Compounds producing severe injury to the cornea and to the conjunctiva. INTERPRETATION: Should be used with extreme caution. It is recommended that use be restricted to areas other than the face.

APPENDIX B

ANALYTICAL QUALITY ASSURANCE

The Analytical Quality Assurance Office certifies the following with regard to this study:

a. This study was conducted in accordance with:

(1) Standing Operating Procedures developed by the Toxicology Division, USAEHA.

(2) Title 21, Code of Federal Regulations, 1981 rev, Part 58, Good Laboratory Practice for Nonclinical Laboratory Studies.

b. Facilities were inspected during its operational phase to insure compliance with paragraph a above.

c. The information presented in this report accurately reflects the raw data generated during the course of conducting the study.

PAUL V. SNEERINGER, Ph.D.
Chief, Analytical Quality
Assurance Office

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